

REMARKS

Withdrawal of the final rejection, entry of the above amendments to claim 1, and favorable reconsideration and allowance of the subject application are respectfully requested in view of the following comments.

Upon entry of this Amendment, claims 1-11, and 23-28 will be pending, of which claims 1 and 25 are independent.

Withdrawn claim 12 is cancelled. Applicants reserve the right, under 35 USC 121, to continue prosecution of the divided out subject matter in a divisional application.

Purely for clarification and emphasis, but without intending to change the meaning or scope of the claims, claim 1 is amended to recite, in the preamble, that exposure to laser light results in a dark marking. This is, of course, a feature of the present invention (*see, e.g.*, page 2, lines 9-12). This feature is alternatively and, quantitatively, stated in claims 24-28, in terms of "contrast value."

It is respectfully submitted that no new matter has been introduced, and no new issues requiring further consideration or search is required since the existing preamble reference to a "light" color laser markable polymer composition already implicitly required that the markings would be of dark color relative to the composition (forming background, after exposure). Furthermore, existing claims 24-28 already recite the contrast value relative to the light composition.

The claims stand finally rejected under 35 USC § 103(a) as allegedly being obvious over JP 8041291 in view of Andes (US 6,280,520) and Kehal (US 6,043,304) or Gareiss (US 6,184,282). Applicants again respectfully traverse this rejection for at least the following reasons.

The essence of the rejection seems to be that previous arguments pointing out that the compositions of JP '291 are dark were not found convincing because "light" and "dark" are relative terms and that it is known to vary the amount of pigment, dye or colorant to produce dark or light shades.

Applicants have no issue regarding the relative nature of "light" and "dark," however, with the understanding that while the degree or value of "light" or "dark" can be varied, "light" is always "lighter" than "dark" and "dark" is always "darker" than "light."

That is, the relative nature of the terms “light” and “dark” does not alter the common understanding that their meanings relative to each other are fixed, i.e., “light” is always less dark or lighter than “dark” and, vice versa.

Thus, a light marking on a dark background is not the same as a dark marking on a light background.

The present invention provides a light laser markable composition, which when irradiated with laser light, results in a dark marking on a light background (i.e., the non-irradiated composition).

To the contrary, the invention disclosed in JP ‘291 discloses a laser markable composition which always and only provides a light marking on a dark background.

While the “contrast value” will be indicative of the relative degree of dark and light in each case, the two compositions are still fundamentally, and nonobviously, different one from the other. Again, in the present invention, the marking are dark, relative to the background (light composition) whereas in JP ‘291, the markings are light (white) relative to the background (“dark” composition). This characterization is expressly set forth in the reference, as discussed below, with reference to its full English translation (copy enclosed).

JP ‘291 describes an epoxy resin containing carbon black and antimony trioxide. As explained in [0007] carbon black is an essential material and is the only laser light sensitive component. The carbon black burns and evaporates under laser irradiation. As well known in the laser marking art, such evaporation of the carbon black causes foaming of the composition and development of a light (white) marking (presumably due to the foaming and the evaporation resulting in the disappearance of the carbon black).

Experimental section [0012] confirms this effect when it reports that contrast and whiteness of printing were verified.

Accordingly, what is described and taught by JP ‘291 is a composition providing a light mark on a dark (darker) background.

Even if the amount of carbon black is reduced in the Examples of JP ‘291 (it cannot be totally removed) all that will result is that the background will become relatively lighter, but never lighter than the markings resulting from the laser irradiation and evaporation of carbon black. The laser markings will always and necessarily be light-on-dark as long as

there is any carbon black remaining in the unexposed composition. It is only the contrast that will be diminished, not the relative relationship between marking and background.

As indicated above, since carbon black is the only laser sensitive component in the composition of JP '291 it cannot be totally removed, otherwise, the composition would no longer function for its intended purpose. A carbon black-free composition according to JP '291 would not be laser markable.

Accordingly, it is respectfully submitted that one of ordinary skill in the art would not consider a light colored laser markable composition, which upon irradiation, forms a dark marking, to be an obvious variant of the disclosure of JP '291.

None of the secondarily applied references would change this conclusion.

Andes describes a pearl luster pigment for an opaque or semi-opaque substrate formed from alternating layers of materials of low refractive index and high refractive index or of metal. Although one such application is for laser marking compositions, the nature or type of such compositions are not described. Nevertheless, there is no reason why one skilled in the art would be motivated to use the pearl luster pigment of Andes as a filler in the compositions of JP '291 nor would there be any reasonable expectation that doing so would somehow result in a "light" composition which, when irradiated by laser light, would result in a marking which is dark relative to the background (i.e., the composition which has not been exposed to the laser irradiation).

Accordingly, the combined disclosures of JP '291 with Andes do not provide evidence that the presently claimed subject matter would have been prima facie obvious.

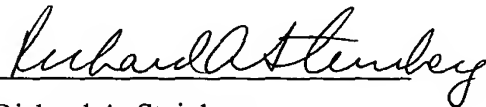
The disclosures of Kehal and Gareiss et al similarly fail to suggest any modification of the compositions of JP '291 which would result in a laser markable composition of light color comprising a) polymer; b) antimony trioxide particles; and c) nacreous pigment, such that when exposed to laser light irradiation, markings are formed which are dark relative to the color of the composition, much less a contrast value of at least 1.5. Even if melamine cyanurate is included in the compositions of JP '291, this would still not result in a composition as claimed.

In light of the above, the Applicants kindly ask the Examiner to reconsider and withdraw this §103(a) rejection.

**CONCLUSION**

As all the rejections noted in the Office Action have been addressed, Applicants request reconsideration of the present application and submit that this application is in condition for allowance. A timely Notice to that effect is respectfully requested. Should questions relating to patentability remain, the Examiner is invited to contact the undersigned to discuss the same.

Respectfully submitted,  
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Enclosures: English translation of JP 8-41291  
Appendix

**APPENDIX**

I. **VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

1. (Twice Amended) A laser markable polymer composition of light color which provides a dark marking upon exposure to irradiation by laser light, comprising:
  - a) a polymer;
  - b) from 0.1 to 10 wt %, relative to the total weight of the polymer composition, of antimony trioxide particles having an average particle size above 0.5 micrometer; and
  - c) a nacreous pigment.